



# THE AMBASSADORS SCHOOLS, OTA

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## THE ULTIMATE MATHEMATICS AMBASSADOR 2020

**TUMA**  
(Annual Mathematics Competition)



## STAGE 2 - WRITTEN TEST

### INSTRUCTIONS

1. This paper is in two sections (A and B)
2. You are to answer all the questions in the two sections
3. SECTION A consists of 20 multiple-choice questions. Each question in this section is worth 2 marks
4. Use HB pencil ONLY to shade the appropriate answer from the options labelled A to E in the appropriate section of the answer sheet. 
5. Below is a sample of how to shade correctly. For instance, if your answer to a question is option B then shade as indicated.
6. Do not shade more than one option for each question. If you make a mistake, erase neatly with an eraser and then shade your new option.
7. SECTION B consists of 4 theory questions. This section is worth 40 marks.
8. Orderliness, neatness and clarity is encouraged.

**SECTION A**

**INSTRUCTION:** Answer all questions in this section. Pick the appropriate answer from the options lettered A to E.

1. What will be the speed of a man in metres/second ( $m/s$ ) if he walks  $9km$  in 2 hours?  
(a)  $16.2m/s$                       (b)  $10.8m/s$                       (c)  $4.5m/s$   
(d)  $2.75m/s$                       (e)  $1.25m/s$
  
2. Biola sold her shoe which she bought for ~~₦~~1 600.00 to her friend Kike for ~~₦~~1 680.00. Find her percentage profit/loss  
(a) 80%                      (b) 50%                      (c) 10%  
(d) 5%                      (e) 1%
  
3. Find the mode of the numbers 2, 2, 3, 4, 7, 8, 5, 9, 4, 4, 2, 3, 2  
(a) 1                      (b) 2                      (c) 3  
(d) 4                      (e) 5
  
4. A school employs 18 teachers. Find the average salary of a teacher in a month if total yearly salary expenditure of the school is ~~₦~~2.7 million.  
(a) ~~₦~~12 500                      (b) ~~₦~~15 000                      (c) ~~₦~~75 000  
(d) ~~₦~~150 000                      (e) ~~₦~~300 000
  
5. Simplify  $\frac{1}{3} - 1\frac{1}{2} - \frac{1}{4} + 2\frac{1}{6}$   
(a)  $\frac{1}{12}$                       (b)  $\frac{5}{6}$                       (c)  $\frac{3}{4}$   
(d)  $\frac{2}{3}$                       (e)  $1\frac{1}{4}$

6. A man started a night journey at  $9pm$  on Wednesday night and arrived at his destination at  $2am$  on Friday of the same week. How many hours did he spend on the journey?

- (a) 5 hours                      (b) 17 hours                      (c) 24 hours  
 (d) 29 hours                      (e) 53 hours

7. Round 10 495 to the nearest thousand

- (a) 10                                  (b) 11                                  (c) 10 000  
 (d) 11 000                      (e) 11 500

8. Given the following number pattern:

5      8      11      a      b      c

Find the value of  $ab - c$

- (a) 218                                  (b) 228                                  (c) 208  
 (d) 326                                  (e) 316

9. Lola puts ₦15 000 into a bank account. The account pays 4% per annum simple interest. Calculate the total amount of money in her account at the end of 2 years.

- (a) ₦600                                  (b) ₦1200                                  (c) ₦13 800  
 (d) ₦15 600                      (e) ₦16 200

10. The angles in a triangle are  $(2x - 40)^\circ$ ,  $(3x + 20)^\circ$  and  $(x + 80)^\circ$ . What is the value of  $2x$ ?

- (a)  $20^\circ$                                   (b)  $30^\circ$                                   (c)  $40^\circ$   
 (d)  $50^\circ$                                   (e)  $75^\circ$

11. Ken makes a fruit drink. He mixes *Apple juice:Mango juice* exactly in the ratio 3: 1. If he has 6 *litres* of mango juice and 12 *litres* of apple juice, how many *litres* of fruit drink can he make?
- (a) 18 *litres*                      (b) 16 *litres*                      (c) 14 *litres*  
(d) 12 *litres*                      (e) 9 *litres*
12. The distance between two towns is 40*km*. A man drove 16*km* before his car broke down. He then walked  $x$  *km* when a bike-man decided to help him for the remaining part of the journey which is half of the distance he walked. What is the value of  $x$ ?
- (a) 8*km*                              (b) 10*km*                              (c) 13*km*  
(d) 16*km*                              (e) 24*km*
13. Three pumps running at the same rate can fill a swimming pool in 55 minutes. How many minutes shorter will it take if two other pumps of the same rate are added to fill the swimming pool.
- (a) 1 hr 17 mins                      (b) 22 mins                              (c) 33 mins  
(d) 55 mins                              (e) 2 hrs 45 mins
14. A school bus uses 4*litres* of diesel for every 48*km* journey it makes. Find the amount of diesel needed to 1024*km*.
- (a)  $85\frac{1}{3}$  *litres*                      (b) 80*litres*                              (c)  $73\frac{1}{3}$  *litres*  
(d) 64 *litres*                              (e) 50 *litres*

15. Deborah received a monthly salary of \$8 000 and 8% commission from total sales of her company. How much is her take home for the month if the sales for the month is \$560 000?
- (a) \$56 400                      (b) \$52 800                      (c) \$48 400  
 (d) \$44 800                      (e) \$40 000
16. A square and a triangle have equal perimeters. The lengths of the three sides of the triangle are 6.1 cm, 8.2 cm and 9.7 cm. What is the area of the square in square centimeters?
- (a)  $24cm^2$                       (b)  $30cm^2$                       (c)  $36cm^2$   
 (d)  $64cm^2$                       (e)  $81.25cm^2$
17. Steve's empty swimming pool will hold 24,000 gallons of water when full. It will be filled by 4 hoses, each of which supplies 2.5 gallons of water per minute. How many hours will it take to fill Steve's pool?
- (a) 60 hours                      (b) 50 hours                      (c) 40 hours  
 (d) 30 hours                      (e) 160 hours
18. Simplify the expression  $\frac{x^2-y^2}{x+y}$  given that  $x = 3\frac{1}{3}$ ,  $y = 2\frac{1}{3}$
- (a)  $2\frac{7}{9}$                       (b)  $1\frac{1}{3}$                       (c)  $5\frac{2}{3}$   
 (d) 0                      (e) 1

19. Find the product of the sum and positive difference of the Lowest Common Multiple (L.C.M.) and Highest Common Factor (H.C.F.) of 12, 18 and 24

(a) 5 148

(b) 5 184

(c) 4 848

(d) 4 964

(e) 4 946

20. A coin of radius  $3.5\text{ cm}$  was rolled along the length of a table of side  $4.5\text{ m}$  long. How many turns will the coin make on the table before it falls off  $\left(\pi = \frac{22}{7}\right)$ ?

(a) 20

(b) 21

(c) 22

(d) 23

(e) 24

## SECTION B

**INSTRUCTION:** There are **four (4)** questions in this section. Answer all questions, showing all your workings clearly, neatly and orderly.

1. Solve the equation  $3\frac{2}{5} - 2x = 5x - 2\frac{1}{3} \div 1\frac{5}{9}$ , giving your final answer as a decimal.

**(10 marks)**

2. Here are the ages (in years) of a group of office workers:

45 18 27 26 32 28 47 30 35

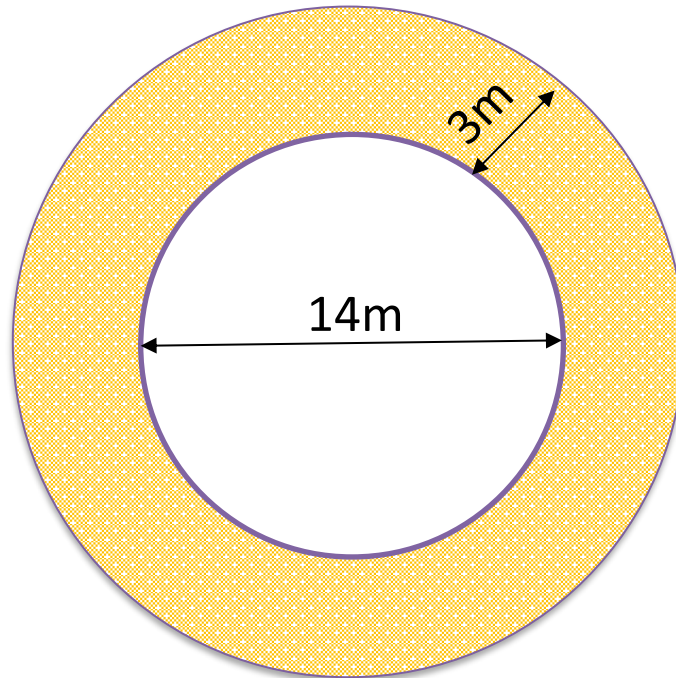
- (a) How many workers have ages which are prime numbers?  
(b) How old was the oldest worker in the year when the youngest worker was 15 years old?  
(c) Calculate the difference between the mean age and median age.

**(10 marks)**

3. A company formed by two brothers made 17% of their initial capital as profit. The brothers, Peter and Paul, divided this profit in the ratio of their investments in the ratio 2:5. How much did Paul collect as profit from the business given that one-third of the difference between their investments is ₦100,000?

**(10 marks)**

4. The floor of primary playground is shaped in circular form. It consists of two segments: the inner concrete circular play area and the outer path filled with sand as shown below.



- (a) Find the area of the floor (in  $m^2$ ) that is filled with sand.
- (b) If the sand was poured into the outer path at ₦35 per square metre of sand, how much was used in filling the outer path completely with sand?

*(10 marks)*